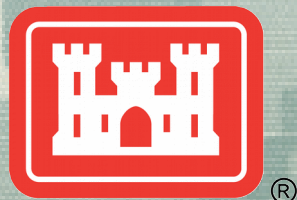


CE-Dredge History & Status



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CE-Dredge History and Background

- CESAM-OP-J was tasked in 2008 by ERDC-CHL to research the needs of creating a new program called CE-Dredge (Corps of Engineers Dredge).
- CE-Dredge is a research task under the USACE Dredging Operations and Environmental Research (DOER) Program
- Will be a decision support and dredge operations management system which will provide access to the USACE dredging-related databases, as well as corresponding tools, standard operating procedures and user guides



Goals

- The CE-Dredge program provides a single integrated system for the planning, monitoring, and management of USACE Dredging Operations.
- This dynamic interaction between existing databases provides access to national dredging information and data through a single integrated system.
- CE-Dredge is comprised of many different components.
 - ▶ Engineer, Scientist, or GIS professional
 - ▶ Managers



What is CE-Dredge?

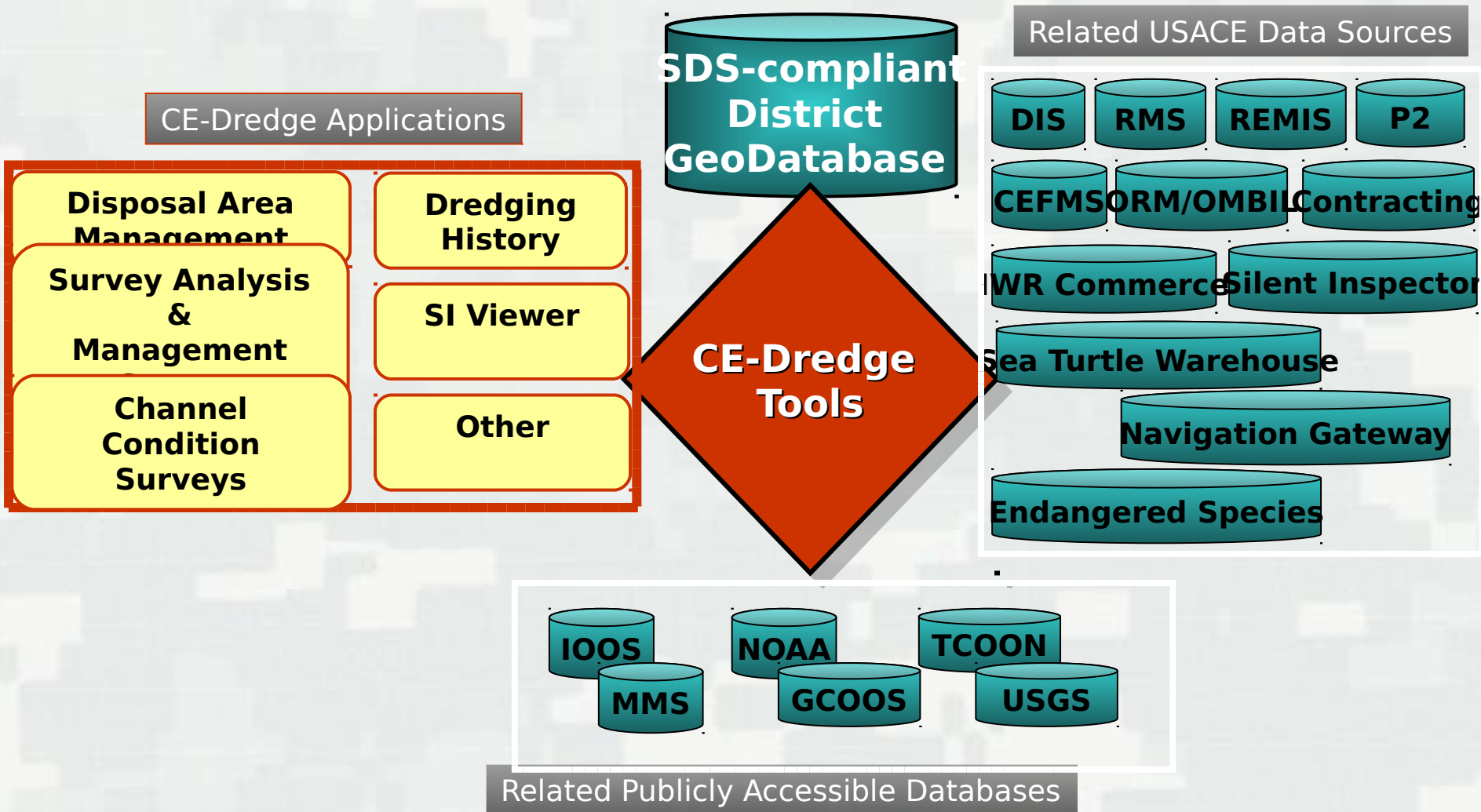
- The CE-Dredge program gives tools to engineers and scientists to visualize spatial data and perform engineering analyses.
- Meeting data standards, integrating datasets, and distributing applications afford users the luxury to easily understand and analyze more data in less time while providing a mechanism to convert raw data into useful information in a cost-effective, timely manner.



What is CE-Dredge?

- CE-Dredge is more than a single application. Because of its specialized design, CE-Dredge's architecture promotes accessibility into existing dredging-related data sources. This dynamic interaction between existing databases, provides access to national dredging information and data through a single integrated system.

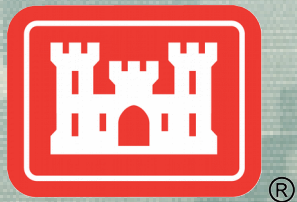




Upon **CE-Dredge** setup and installation, the CE-Dredge tools and applications manage all connections to pertinent databases. This coordination reduces and/or eliminates duplication of efforts to populate dredging information and data. When users choose their desired interface (web or ArcGIS desktop), all data is referenced from the single integrated system.

CE-Dredge Applications

- Launch Pad
- CE-Dredge Website
- SUDS
- Dredging History Database
- Channel Condition Indices



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CE-Dredge Architecture

- Built upon the development model used for eCoastal
 - ▶ A SDSFIE database filter and 3.0 Adaption will be created to support Dredging-specific datasets.
 - ▶ Data structure will plug-into existing District EGIS.
 - ▶ Data retrieval tools built under eCoastal, have been renamed “CE-Tools”. These tools can be used to load ANY type of data.
 - ▶ The CE-Dredge Programs includes a number of different applications running on different platforms to support all levels and types of users.



Analysis & Decision Making Tools

- Development of CE-Dredge tools are focused on meeting the business of coastal engineers. The following questions guide the tools needed:
 - When to Dredge?
 - Where to Dredge?
 - Where to Place?
 - Alternatives to Dredging?
 - Dredging Availability?



CE-Dredge Program

Applications

- Web-based Data Access
 - ▶ Dredging Histories
 - ▶ District Data Inventories
 - ▶ Available Data Models
 - ▶ Data Resources
- Web-based Mapping & Services
 - ▶ List of Related Services
 - ▶ Composite Web Mapping Viewer
- Desktop Tools
 - ▶ SUDS
 - ▶ LaunchPad
- ArcGIS Data Access & Analysis Tools
 - ▶ CE-Tools: DataViewer & Survey Tools



Launch Pad

- The Launch Pad is to be a Desktop application that provides a *dashboard* for all the functions and applications available under the CE-Dredge Program.
- Will be build upon a series of web technologies, as new functions become available all users are instantly notified.



Questions

Map Viewer

Tool List

Feedback

Answer

What are you looking for?

- When should I dredge?
- ✓ Where should I dredge?
- Where should I not dredge?

Based on selected question, map will be displayed (data gathered from map services) for geographic extent with applicable data.

Are there any alternatives to Dredging?

What is the Dredge Availability?

Where are the Dredges?

What is the Dredge Schedule?

Questions will guide the workflow.

→ Division

| District

| Project

| Reach



Questions

Map Viewer

Tool List

Feedback

Answer

Fly To Find Businesses Directions

Fly to e.g., 37 25' 19.1"N, 122 05' 06"W

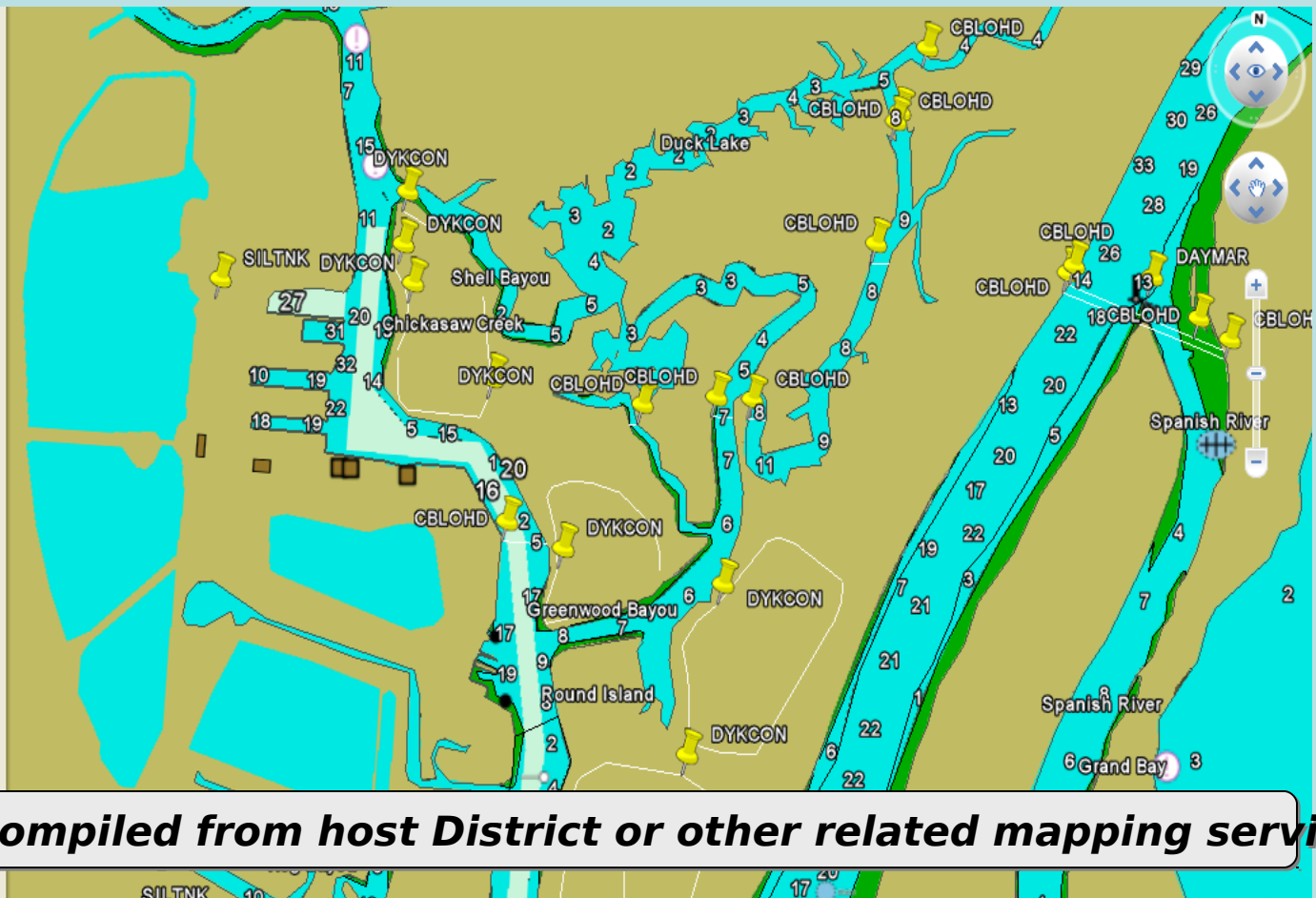
e

Places Add Content

- Navimatics Marine North America
A marine features layer derived from NOAA Electronic Navigation
 - Marine - Washington and Or...
 - Marine - California and Hawaii
 - Marine - Texas, Louisiana an...
 - ☒ Marine - Alabama and Florida
 - Marine - Georgia and South ...
 - Marine - North Carolina, Virg...
 - Marine - Delaware, New Jer...
 - Marine - Rhode Island, Mass...
- State Geologic Map Compilation
- Off

Layers

- Primary Database
- Geographic Web
- Roads
- 3D Buildings
- Street View
- Borders and Labels
- Traffic
- Gallery
- Ocean



Data will be compiled from host District or other related mapping services.



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Questions**Map Viewer****Tool List****Feedback****Answer**

List of Tools that can be used for additional data retrieval or analysis, related to your initial question.

ArcGIS	Web Apps	Web Resources	Standalone
CE-Tools: Data Viewer DataPicker	View Channel Conditions	Shore Protection System Database	SUDS
CE-Tools: Survey Tools Volume Difference			
CE-Tools: Dredging History			
...			

Hyperlinks will launch Web and Desktop applications. If tool is in ArcGIS, ArcGIS will open.

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Questions

Map Viewer

Tool List

Feedback

Answer

If selected tool is a CE-Dredge Web Tool, this tab will be reserved for user input. Input will be used as variables in any necessary algorithms or filters.

I want to see all Dredges in my District

- ✓ I want to see all Dredges in my District that are actively Dredging
- I want to see just Pipeline Dredges that are currently in use
- I am looking for the Dredge Named:

- ...
- ✓ I want to see the Dredge(s) on a map
- I just want the current coordinate of the Dredge(s)



Questions

Map Viewer

Tool List

Feedback

Answer

Fly To Find Businesses Directions

Fly to e.g., 37 25' 19.1"N, 122 05' 06"W

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▼ Places Add Content

- Navimatics Marine North America
A marine features layer derived from NOAA Electronic Navigation
 - Marine - Washington and Or...
 - Marine - California and Hawaii
 - Marine - Texas, Louisiana an...
 - Marine - Alabama and Florida
 - Marine - Georgia and South ...
 - Marine - North Carolina, Virg...
 - Marine - Delaware, New Jer...
 - Marine - Rhode Island, Mass...
- State Geologic Map Compilation
- Off

▼ Layers

- Primary Database
- Geographic Web
- Roads
- 3D Buildings
- Street View
- Borders and Labels
- Traffic
- Weather
- Gallery



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Launch Pad

- What common questions need to be answered?
- Launch Pad will guide user through all resources to answer desired question.



CE-Dredge Website

- CE-Dredge Website houses all of the web applications developed/to be developed under the CE-Dredge program.
 - ▶ Dredging Histories
 - ▶ Channel Conditions
 - ▶ Web Mapping
- Provides documentation and resources to any CE-Dredge component.

<http://ce-dredge.usace.army.mil/>



[Homepage](#)[About CE-Dredge](#)[CE-Dredge Tools](#) ▾[Mapping & Data](#) ▾[Library](#)[Links](#)[Contact Us](#)

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CE-Dredge

Google™ Custom Search

Go

[Home](#) > [Welcome](#)

CE-Dredge Quick Links

[CE-Dredge Online Mapping](#) >

Access the online mapping portal to link to dredging data hosted by participating CE-Dredge Districts.

[CE-Dredge Tool Download](#) >

Looking to download any of the CE-Dredge Desktop Tools? Follow this link to preview and download available installation files.

[Dredging History Viewer](#) >

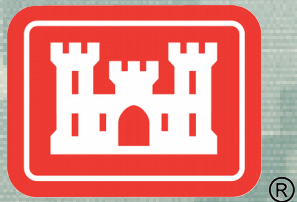
Allows users to access general reporting-, online mapping-, disposal area management- and dredging contract management-focused modules.

Welcome

CE-Dredge is a program currently under development to assist with the planning, monitoring, and management of dredging operations. CE-Dredge is based on the fundamentals established for the eCoastal program with interchangeable for coastal and dredging management. Both programs provide for a standard data management solution for all types (spatial and non-spatial) of dredging and coastal data. Under the CE-Dredge GIS and database applications/tools will be designed and deployed to support data access and tools to support dredging management.



Dredging History Application



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Menu

Disposal Area Tracker

Contract Manager

Disposal Area Inspections

Apply for Beneficial Usage

Reports and Documents

Disposal Area Inspections

Insp Date:












































2009

Disp Area:

Type:

Status:

search

Insp Date	Disp Area	Type	Insp ID	Status	Print
1/13/2009	C05	ICND	INSP-2009-00001	COMPLETE	 
1/23/2009	C08	ICND	INSP-2009-00002	COMPLETE	 
2/5/2009	AB04	ICND	INSP-2009-00004	COMPLETE	 
2/4/2009	C04	ICND	INSP-2009-00005	COMPLETE	 
2/9/2009	C01	ICND	INSP-2009-00011	COMPLETE	 
2/10/2009	C09	ICND	INSP-2009-00012	COMPLETE	 
2/18/2009	C03	ICND	INSP-2009-00017	COMPLETE	 
2/19/2009	C12	ICND	INSP-2009-00018	COMPLETE	 
2/19/2009	C13	ICND	INSP-2009-00019	COMPLETE	 
2/18/2009	AL05	ICND	INSP-2009-00020	COMPLETE	 
2/10/2009	C10	ICND	INSP-2009-00021	COMPLETE	 
2/12/2009	C06	ICND	INSP-2009-00022	COMPLETE	 
2/12/2009	C07	ICND	INSP-2009-00023	COMPLETE	 
2/12/2009	PC01	ICND	INSP-2009-00024	EDIT	
2/27/2009	G03	ICND	INSP-2009-00025	EDIT	
	C17A	ICND	INSP-2009-00028	NEW	 
	C17B	ICND	INSP-2009-00029	NEW	 
	C18	ICND	INSP-2009-00030	NEW	 
	C20A	ICND	INSP-2009-00032	EDIT	
	C20B	ICND	INSP-2009-00033	EDIT	
	C21	ICND	INSP-2009-00034	EDIT	
2/24/2009	C15	ICND	INSP-2009-00035	COMPLETE	 
2/24/2009	C16	ICND	INSP-2009-00036	COMPLETE	 
2/25/2009	C19	ICND	INSP-2009-00037	COMPLETE	 

waterline.

Shore Access Lane : COR-00116 (C05)

Photo: [view](#)

Description: Southern SAL to primary cell; good condition; small trees; 15-ft vertical bluff at waterline.

Part III: Repairs and Comments

C05-P1:

Repairs Needed Prior to Next Usage? yes ☒ no ☐

If yes, describe repairs:

Clear SAL, dikes, and replace drainage structures.

Comments:

Option 1: Install 2-36' CMP's in crossdike, and replace existing final discharge CMP's with wierbox.
Note - R&D dike crown clearing and SAL clearing was performed in Jan 2009.

C05-S1:

Repairs Needed Prior to Next Usage? yes ☒ no ☐

If yes, describe repairs:

Clear SAL, dikes, and replace drainage structures.

Comments:

Option 2: Swap primary and secondary cells; remove existing CMP's, install CMP's in crossdike,
install weirbox in low SW corner of DA. Note - R&D dike crown clearing and SAL clearing was
performed in Jan 2009.



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Channel Condition Indices System (CCI)



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Channel Condition Indices system (CCI)

NO Pilot program that is now authorization to moved into production

Intranet > Navigation > Channel Conditioning

Navigation Intra Home
Survey Data
Channel Conditioning
Channel Framework

Select A Sub Project Select A Fiscal Year 2006

Subproject Name	Inner Average	Outer Average
Arlington Ship Channel	n/a	n/a
Chickasaw Creek	n/a	n/a
Garrows Bend	n/a	n/a
Mobile Bar Channel	85%	42%
Mobile lower Bay Channel	84%	15%
Mobile River Channel	3%	4%
Mobile Upper Bay Channel	49%	7%
Theodore Ship Channel	n/a	n/a
Theodore Barge Channel	n/a	n/a

Back to Master Projects

Report of Channel Conditions by Survey 7/14/2005

Survey Date: 7/14/2005

Reach Name	L.O. Qtr	L.I. Qtr	R.I. Qtr	R.O. Qtr
Buoy 9 to Buoy 11	Failed	Passed	Passed	Failed
Buoy 11 to Buoy 13	Failed	Failed	Passed	Failed
Buoy 13 to Buoy 15	Passed	Passed	Passed	Failed
Buoy 15 to Buoy 17	Passed	Passed	Passed	Failed
Buoy 17 to Buoy 19	Passed	Passed	Passed	Passed
Buoy 19 to Buoy 21	Failed	Passed	Passed	Passed
Buoy 21 to 200' North of Buoy 22	Passed	Passed	Passed	Failed

Project Authorization Success Percentages per Fiscal Year

Fiscal Period: 10/01/2004 - 9/31/2005

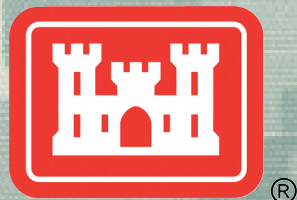
Reach Name (# of Surveys)	L.O. Qtr	L.I. Qtr	R.I. Qtr	R.O. Qtr
700' South of Buoy 1 to Buoy 3 (5)	100%	100%	100%	60%
Buoy 3 to Buoy 5 (5)	40%	60%	60%	40%
Buoy 5 to Buoy 7 (7)	29%	43%	71%	29%
Buoy 7 to Buoy 9 (6)	0%	50%	50%	57%
Buoy 9 to Buoy 11 (7)	0%	43%	57%	14%
Buoy 11 to Buoy 13 (8)	25%	75%	88%	0%
Buoy 13 to Buoy 15 (6)	67%	83%	67%	0%

Trusted sites

- Automatically reports a percentage of time that all navigation channels meet their congressional authorized project dimension based on processing of channel condition surveys.
- Developed calculations of key performance measures related to navigation channel reliability and availability
- Develop a business flow and practice that utilizes modern web-based and desktop tools and architecture to automate processes to move channel condition survey data from the field to a District server.



Survey Uploader and Delivery System (SUDS)



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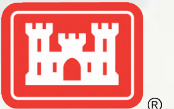
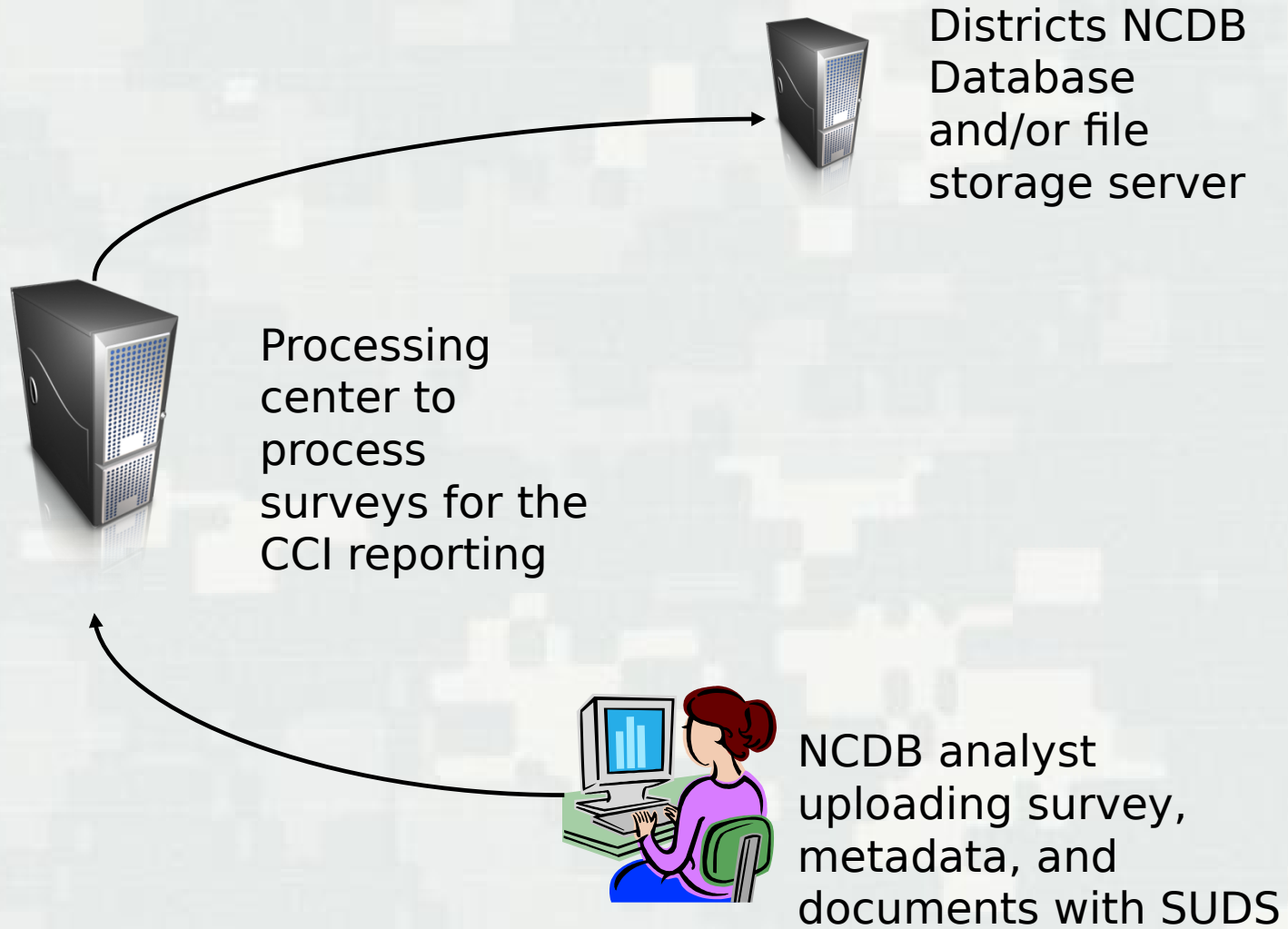


SUDS Functionality

- Allows a Corps' survey technician or outside contractor to upload hydrographic or topographic surveys to a centralized database in their respective Districts
- Handling, storing, formatting, and converting of post processed ASCII data into useable data layers for analytical methods and visualization techniques for all types of engineering purposes
- Reduces data calls for the Hydrographic Survey offices by provide surveys to all uses in the respective Districts.



SUDS Workflow



USACE | SUDS - Metadata Form

Survey Type: Profile

General Misc POC Entry Spatial Reference Data Collection Specifics

Survey Date: 2009-04-03 **Survey Time:**

Type of Survey: Profile

Survey Classification: Profile After Dredge Channel Condition Survey

District: CESAM

Project Name: BAYOU LA BATRE HARBOR

Sub Project: Bayou La Batre

Disposal Area: 65C

Borrow Area: N/A

Survey Title:


Survey Description:

< Back Continue Cancel

Up-loader Application

- ▶ Allow uploading of FGDC-compliant metadata
- ▶ Also provides utilities for creating FGDC-compliant metadata with all uploaded surveys



 **USACE** | **SUDS - File Queue**

Survey Type: Profile

Survey Dynamics

Project: BAYOU LA BATRE HARBOR Channel: Bayou La Batre

Reach Type (Reach/Station/Bar/Mile):

Station

Document Reach Start: Document Reach End:

File Uploads

PDF File Upload:

DGN File Upload:

DXF/ZIP File Upload:

File Queue


To remove file from upload below, please click on the checkbox beside the item and click the "Remove Checked" button.

- ☐ 0000+62-0002+20
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.pdf
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.dgn
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.zip
- ☐ 0002+92-0006+41
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.pdf
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.dgn
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.zip
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.dgn
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.zip
- ☐ 0002+92-0014+90
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.pdf
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.dgn
 - ☐ K:\Projects\Test Upload Files\BSec1c082808.zip

Up-loader Application

This form allows user to upload all files associated with a survey. Files can be formatted as PDF, DGN or DXF. All other formats can be zipped and uploaded here.



 USACE || SUDS - File Preview

Survey Upload

Survey XYZ Upload:

File Delimiters

Please specify what separates each unit of data in your file *Survey Type: Profile*

Delimiters

☒ Comma ☐ Space ☐ Tab ☐ Semicolon

☒ First line contains field names

Warning

Please make sure your survey file is in the format: X,Y,Z or Easting, Northing, Elevation.
Using a comma as a delimiter for the file.

Data Preview

x	y	z
1796497.90	67380.59	-6.96
1796497.89	67380.59	-6.96
1796497.89	67380.59	-6.96
1796497.85	67380.60	-6.96
1796497.85	67380.60	-6.96
1796495.28	67381.20	-6.96
1796495.28	67381.20	-6.96
1796492.55	67381.84	-6.96

Up-loader Application

The survey upload page



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Deployment Benefits

- Current Design allows for rapid deployment
 - ▶ Servers and personnel are all in place to rapidly process surveys and send the data to be housed in individual districts
 - ▶ Specialized software required to process survey data and other necessary datasets such as channel framework are already housed and in place in the processing node
 - ▶ Turnaround time will be **less than an hour** once automation is in place
- Consistent data acquisition and storage
 - ▶ With SUDS, all data will be collected and uploaded in a consistent format and have a constant storage across all Districts.
 - ▶ Ensures metadata is gathered for every survey



QA\QC Benefits

- Automatic QA/QC benefits built in
 - ▶ Check schema
 - ▶ Check metadata
 - ▶ Check projection information automatically
- If an error occurs the user will be notified of any mistakes for reloading or needed edits.
- Once the Processing Node scrubs data, the full dataset is sent back to the respective District for archiving.



Survey Delivery System

- All post processed will be stored within a series of database tables at the LOCAL District
 - ▶ No District data will be stored anywhere else.
- Will build GIS layer files and Metadata for all surveys
- Surveys will be searchable and users will be able to download them through the NCDB metadata search engine (ESRI's Geospatial Extension)



SUDS Additional Capabilities

- Developed and tested Survey Upload and Delivery system, or SUDS.
 - ▶ Supports uploading surveys to respective Districts' navigation web pages
 - ▶ Supports HQ-requested channel condition indices reporting process
 - ▶ Relates national channel framework to uploaded and inventoried surveys
 - ▶ All uploaded surveys will also be compatible and accessible from the eCoastal Survey Analysis and Management System (SAMS), to provide scientific analysis and volumetric calculations
 - ▶ Will provide the ability to hyperlinked to the Navigation Gateway

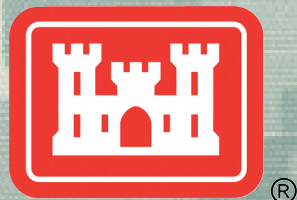


Summary

- Saves time and cost by provide a suite of tools for survey data collection, search, and delivery
- Preserves district assets and institutional knowledge
- Provide data need to support the Channel condition indices reporting tools
- Facilitates automatic channel condition reporting



Questions?



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